

AP20 Rec'd PCT/PTO 18 MAY 2006  
SEQUENCE LISTING

<110> BASF AKTIENGESELLSCHAFT et al.

<120> METHODS FOR THE PREPARATION OF A FINE  
CHEMICAL BY FERMENTATION

<130> BGI-159PC2

<150> PCT/IB2003/006464

<151> 2003-12-18

<160> 15

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 1650

<212> DNA

<213> Corynebacterium glutamicum

<220>

<221> CDS

<222> (101)...(1627)

<400> 1

accaacgacg acgccggtgt agcagatgta ttggagtggg ggttctaata ggtgggtgta 60  
aaacactgct tagtggccca atacgtgcaa aaataaggcc atg aga atc tca aag 115  
Met Arg Ile Ser Lys  
1 5

gcc aat gcg tat gtt gca gcg att gac caa ggc acc act tcc act cgg 163  
Ala Asn Ala Tyr Val Ala Ala Ile Asp Gln Gly Thr Thr Ser Thr Arg  
10 15 20

tgc atc ttc att gat gcc caa gga aaa gtg gtg tct tct gct tcc aag 211  
Cys Ile Phe Ile Asp Ala Gln Gly Lys Val Val Ser Ser Ala Ser Lys  
25 30 35

gag cac cgc caa atc ttc cca caa cag ggc tgg gta gag cac gat cct 259  
Glu His Arg Gln Ile Phe Pro Gln Gln Gly Trp Val Glu His Asp Pro  
40 45 50

gaa gaa att tgg gac aac att cga tct gtc gtc agc cag gcg atg gtc 307  
Glu Glu Ile Trp Asp Asn Ile Arg Ser Val Val Ser Gln Ala Met Val  
55 60 65

tcc att gac atc acc cca cac gag gtt gca tcg ctg gga gtc acc aac 355  
Ser Ile Asp Ile Thr Pro His Glu Val Ala Ser Leu Gly Val Thr Asn  
70 75 80 85

cag cgc gaa acc acc gtg gtg tgg gac aag cac acc ggc gaa cct gtc 403  
Gln Arg Glu Thr Thr Val Val Trp Asp Lys His Thr Gly Glu Pro Val  
90 95 100

tac aac gca atc gtg tgg caa gac acc cgc acc tct gac att tgc cta 451  
Tyr Asn Ala Ile Val Trp Gln Asp Thr Arg Thr Ser Asp Ile Cys Leu  
105 110 115

gag atc gcg ggc gaa gaa ggc cag gaa aag tgg ctt gac cgc acc ggc Glu Ile Ala Gly Glu Glu Gly Gln Glu Lys Trp Leu Asp Arg Thr Gly 120 125 130	499
ctg ctg atc aac tcc tac cca tgc ggg ccc aaa atc aag tgg att ctc Leu Leu Ile Asn Ser Tyr Pro Ser Gly Pro Lys Ile Lys Trp Ile Leu 135 140 145	547
gac aac gtt gag gga gct cgc gaa cgc gcc gaa aag ggc gac ctt ttg Asp Asn Val Glu Gly Ala Arg Glu Arg Ala Glu Lys Gly Asp Leu Leu 150 155 160 165	595
ttt ggc acc atg gat acc tgg gtg ctg tgg aac ctg acc ggc ggt gtc Phe Gly Thr Met Asp Thr Trp Val Leu Trp Asn Leu Thr Gly Gly Val 170 175 180	643
cgc ggc gac gac ggt gat gat gcc atc cac gtc acc gat gtc acc aac Arg Gly Asp Asp Gly Asp Asp Ala Ile His Val Thr Asp Val Thr Asn 185 190 195	691
gca tcc cgc aca cta ttg atg gat ctc cgc acg caa cag tgg gat cca Ala Ser Arg Thr Leu Leu Met Asp Leu Arg Thr Gln Gln Trp Asp Pro 200 205 210	739
gaa cta tgc gaa gcc cta gac att ccg atg tcc atg ctc cct gag att Glu Leu Cys Glu Ala Leu Asp Ile Pro Met Ser Met Leu Pro Glu Ile 215 220 225	787
cgt ccc tcc gtc gga gaa ttc cgc tcc gtg cgc cac cgc gga acc cta Arg Pro Ser Val Gly Glu Phe Arg Ser Val Arg His Arg Gly Thr Leu 230 235 240 245	835
gcc gac gtc ccg att act ggc gtg ctc ggc gac cag caa gcg gcc ctt Ala Asp Val Pro Ile Thr Gly Val Leu Gly Asp Gln Gln Ala Ala Leu 250 255 260	883
ttt ggt cag ggc gga ttc cac gaa ggt gct gct aaa aat acc tac ggc Phe Gly Gln Gly Gly Phe His Glu Gly Ala Ala Lys Asn Thr Tyr Gly 265 270 275	931
acc ggc ctc ttc ctg ctg atg aac acc ggc acc tgc ttg aag att tcc Thr Gly Leu Phe Leu Leu Met Asn Thr Gly Thr Ser Leu Lys Ile Ser 280 285 290	979
gag cac ggc ctg ctg tcc acc atc gcc tat caa cgg gaa gga tcc gct Glu His Gly Leu Leu Ser Thr Ile Ala Tyr Gln Arg Glu Gly Ser Ala 295 300 305	1027
ccg gtc tac gcg ctg gaa ggt tcc gta tcc atg ggc ggt tcc ttg gtg Pro Val Tyr Ala Leu Glu Gly Ser Val Ser Met Gly Gly Ser Leu Val 310 315 320 325	1075
cag tgg ctg cgc gac aac cta cag cta atc ccc aac gca cca gcg att Gln Trp Leu Arg Asp Asn Leu Gln Leu Ile Pro Asn Ala Pro Ala Ile 330 335 340	1123
gaa aac ctc gcc cga gaa gtc gaa gac aac ggt ggc gtt cat gtt gtc Glu Asn Leu Ala Arg Glu Val Glu Asp Asn Gly Gly Val His Val Val 345 350 355	1171
cca gca ttc acc gga ctg ttc gca cca cgt tgg cgc ccc gat gct cgt	1219

```

Pro Ala Phe Thr Gly Leu Phe Ala Pro Arg Trp Arg Pro Asp Ala Arg
      360                      365                      370

ggc gtc att aca ggc ctc acc cgt ttt gcc aac cgc aaa cac atc gcc 1267
Gly Val Ile Thr Gly Leu Thr Arg Phe Ala Asn Arg Lys His Ile Ala
      375                      380                      385

cgc gca gtc ctt gaa gcc aac gcc ttc caa acc cgc gaa gtt gtg gac 1315
Arg Ala Val Leu Glu Ala Asn Ala Phe Gln Thr Arg Glu Val Val Asp
      390                      395                      400                      405

gcc atg gcc aaa gac gca ggc aaa gcc ctc gaa tcc ctc cgc gtc gac 1363
Ala Met Ala Lys Asp Ala Gly Lys Ala Leu Glu Ser Leu Arg Val Asp
      410                      415                      420

ggg gcg atg gtg gaa aat gac ctc ctc atg caa atg caa gcc gac ttc 1411
Gly Ala Met Val Glu Asn Asp Leu Leu Met Gln Met Gln Ala Asp Phe
      425                      430                      435

ctc ggc atc gac gtc caa cgt ctc gag gac gta gaa acc acc gcc gtc 1459
Leu Gly Ile Asp Val Gln Arg Leu Glu Asp Val Glu Thr Thr Ala Val
      440                      445                      450

ggc gtc gca ttc gct gca ggt ctc ggc tct gga ttc ttc aaa aca act 1507
Gly Val Ala Phe Ala Ala Gly Leu Gly Ser Gly Phe Phe Lys Thr Thr
      455                      460                      465

gac gag atc gaa aaa ctt att gca gtg aag aaa gtc tgg aac cct gac 1555
Asp Glu Ile Glu Lys Leu Ile Ala Val Lys Lys Val Trp Asn Pro Asp
      470                      475                      480                      485

atg agc gaa gaa gag cgc gaa cgt cgc tat gcc gaa tgg aat agg gca 1603
Met Ser Glu Glu Glu Arg Glu Arg Arg Tyr Ala Glu Trp Asn Arg Ala
      490                      495                      500

gtg gag cat tct tat gac cag gcc tagctgattt gggtcggcct tta 1650
Val Glu His Ser Tyr Asp Gln Ala
      505

```

&lt;210&gt; 2

&lt;211&gt; 509

&lt;212&gt; PRT

&lt;213&gt; Corynebacterium glutamicum

&lt;400&gt; 2

```

Met Arg Ile Ser Lys Ala Asn Ala Tyr Val Ala Ala Ile Asp Gln Gly
  1      5      10      15
Thr Thr Ser Thr Arg Cys Ile Phe Ile Asp Ala Gln Gly Lys Val Val
  20      25      30
Ser Ser Ala Ser Lys Glu His Arg Gln Ile Phe Pro Gln Gln Gly Trp
  35      40      45
Val Glu His Asp Pro Glu Glu Ile Trp Asp Asn Ile Arg Ser Val Val
  50      55      60
Ser Gln Ala Met Val Ser Ile Asp Ile Thr Pro His Glu Val Ala Ser
  65      70      75      80
Leu Gly Val Thr Asn Gln Arg Glu Thr Thr Val Val Trp Asp Lys His
  85      90      95
Thr Gly Glu Pro Val Tyr Asn Ala Ile Val Trp Gln Asp Thr Arg Thr
  100     105     110
Ser Asp Ile Cys Leu Glu Ile Ala Gly Glu Glu Gly Gln Glu Lys Trp

```

```

      115              120              125
Leu Asp Arg Thr Gly Leu Leu Ile Asn Ser Tyr Pro Ser Gly Pro Lys
      130              135              140
Ile Lys Trp Ile Leu Asp Asn Val Glu Gly Ala Arg Glu Arg Ala Glu
      145              150              155              160
Lys Gly Asp Leu Leu Phe Gly Thr Met Asp Thr Trp Val Leu Trp Asn
      165              170              175
Leu Thr Gly Gly Val Arg Gly Asp Asp Gly Asp Asp Ala Ile His Val
      180              185              190
Thr Asp Val Thr Asn Ala Ser Arg Thr Leu Leu Met Asp Leu Arg Thr
      195              200              205
Gln Gln Trp Asp Pro Glu Leu Cys Glu Ala Leu Asp Ile Pro Met Ser
      210              215              220
Met Leu Pro Glu Ile Arg Pro Ser Val Gly Glu Phe Arg Ser Val Arg
      225              230              235              240
His Arg Gly Thr Leu Ala Asp Val Pro Ile Thr Gly Val Leu Gly Asp
      245              250              255
Gln Gln Ala Ala Leu Phe Gly Gln Gly Gly Phe His Glu Gly Ala Ala
      260              265              270
Lys Asn Thr Tyr Gly Thr Gly Leu Phe Leu Leu Met Asn Thr Gly Thr
      275              280              285
Ser Leu Lys Ile Ser Glu His Gly Leu Leu Ser Thr Ile Ala Tyr Gln
      290              295              300
Arg Glu Gly Ser Ala Pro Val Tyr Ala Leu Glu Gly Ser Val Ser Met
      305              310              315              320
Gly Gly Ser Leu Val Gln Trp Leu Arg Asp Asn Leu Gln Leu Ile Pro
      325              330              335
Asn Ala Pro Ala Ile Glu Asn Leu Ala Arg Glu Val Glu Asp Asn Gly
      340              345              350
Gly Val His Val Val Pro Ala Phe Thr Gly Leu Phe Ala Pro Arg Trp
      355              360              365
Arg Pro Asp Ala Arg Gly Val Ile Thr Gly Leu Thr Arg Phe Ala Asn
      370              375              380
Arg Lys His Ile Ala Arg Ala Val Leu Glu Ala Asn Ala Phe Gln Thr
      385              390              395              400
Arg Glu Val Val Asp Ala Met Ala Lys Asp Ala Gly Lys Ala Leu Glu
      405              410              415
Ser Leu Arg Val Asp Gly Ala Met Val Glu Asn Asp Leu Leu Met Gln
      420              425              430
Met Gln Ala Asp Phe Leu Gly Ile Asp Val Gln Arg Leu Glu Asp Val
      435              440              445
Glu Thr Thr Ala Val Gly Val Ala Phe Ala Ala Gly Leu Gly Ser Gly
      450              455              460
Phe Phe Lys Thr Thr Asp Glu Ile Glu Lys Leu Ile Ala Val Lys Lys
      465              470              475              480
Val Trp Asn Pro Asp Met Ser Glu Glu Glu Arg Glu Arg Arg Tyr Ala
      485              490              495
Glu Trp Asn Arg Ala Val Glu His Ser Tyr Asp Gln Ala
      500              505

```

&lt;210&gt; 3

&lt;211&gt; 35

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Oligonucleotide

&lt;400&gt; 3

gagagagaga cgcgccccag tggctgagac gcac

35

<210> 4  
 <211> 34  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Oligonucleotide

<400> 4  
 ctctctctgt cgacgaattc aatcttacgg cctg

34

<210> 5  
 <211> 4323  
 <212> DNA  
 <213> *Corynebacterium glutamicum*

<400> 5  
 tcgagaggcc tgacgtcggg cccggtacca cgcgtcatat gactagttcg gacctagggg 60  
 tatcgtcgac atcgatgctc ttctgcgtta attaacaatt gggatcctct agaccgaggg 120  
 tttaaatcgc tagcgggctg ctaaaggaag cggaacacgt agaaagccag tccgcagaaa 180  
 cgggtgctgac cccggatgaa tgtcagctac tgggctatct ggacaaggga aaacgcaagc 240  
 gcaaagagaa agcaggtagc ttgcagtggg cttacatggc gatagctaga ctgggagggt 300  
 ttatggacag caagcgaacc ggaattgccg gctggggcgc cctctggtaa ggttgggaag 360  
 ccctgcaaag taaactggat ggctttcttg ccgccaagga tctgatggcg caggggatca 420  
 agatctgatac aagagacagg atgaggatcg ttctgcataa ttgaacaaga tggattgcac 480  
 gcaggttctc cggccgcttg ggtggagagg ctattcggct atgactgggc acaacagaca 540  
 atcggctgct ctgatgccgc cgtgttccgg ctgtcagcgc agggggcgcc gggtcttttt 600  
 gtcaagaccg acctgtccgg tgcctgaat gaactgcagg acgaggcagc gcggctatcg 660  
 tggctggcca cgacgggctg tccctgcgca gctgtgctcg acgttgtcac tgaagcggga 720  
 agggactggc tgctattggg cgaagtggcg gggcaggatc tcctgtcatc tcaccttgct 780  
 cctgccgaga aagtatccat catggctgat gcaatgcggc ggctgcatac gcttgatccg 840  
 gctacctgpc cattcgacca ccaagcgaaa catcgcacg agcagcacg tactcggatg 900  
 gaagccggtc ttgtcgatca ggatgatctg gacgaagagc atcaggggct cgcgccagcc 960  
 gaactgttct caggtctcaa ggcgcgcgag cccgacggcg aggatctcgt cgtgacctat 1020  
 ggcgatgcct gcttgccgaa tatcatgggt gaaaatggcc gcttttcttg attcatcgac 1080  
 tgtggccggc tgggtgtggc ggaccgctat caggacatag cgttggctac ccgtgatatt 1140  
 gctgaagagc ttggcggcga atgggctgac cgcttctcgt tgctttacgg tatcgccgct 1200  
 cccgatccgc agcgcacgac cttctatcgc cttcttgacg agttcttctg agcgggactc 1260  
 tggggttcga aatgaccgac caagcgacgc ccaacctgccc atcacgagat ttcgattcca 1320  
 ccgccgcctt ctatgaaagg ttgggcttcg gaatcgtttt ccgggacgcc ggctggatga 1380  
 tcctccagcg cggggatctc atgctggagt tcttcgcccc cgctagcggc gcgccggcgc 1440  
 gcccggtgtg aaataccgca cagatgcgta aggagaaaa accgcacag gcgctcttcc 1500  
 gcttctcgcg tcactgactc gctgcgctcg gtcttcggc tgccggcagc ggtatcagct 1560  
 cactcaaaag cggtaatagc gttatccaca gaatcagggg ataacgcagg aaagaacatg 1620  
 tgagcaaaaag gccagcaaaa ggccaggaac cgtaaaaagg ccgcgttgct ggcgtttttc 1680  
 cataggctcc gccccctga cgagcatcac aaaaatcgac gctcaagtca gaggtggcga 1740  
 aaccgcagag gactataaag ataccaggcg tttccccctg gaagctccct cgtgcgctct 1800  
 cctgttccga ccctgccgct taccggatag ctgtccgcct ttctcccttc gggaagcgtg 1860  
 gcgctttctc atagctcacg ctgtaggtat ctgagttcgg tgtaggtcgt tcgctccaag 1920  
 ctgggctgtg tgcacgaacc ccccgttcag cccgaccgct gcgccttacc cggtaactat 1980  
 cgtcttgagt ccaaccgggt aagacacgac ttatcgccac tggcagcagc cactggtaac 2040  
 aggtattagca gagcgaggta tgtaggcggg gtacagagt tcttgaagtg gtggcctaac 2100  
 tacggctaca ctagaaggac agtatgtgtg atctgcgctc tgctgaagcc agttaccttc 2160  
 ggaaaaagag ttggtagctc ttgatccggc aaacaaacca ccgctggtag cgggtggttt 2220  
 tttgtttgca agcagcagat tacgcgcaga aaaaaaggat ctcaagaaga tcttttgatc 2280  
 ttttctacgg ggtctgacgc tcagtggaaac gaaaactcac gttaagggat tttggtcatg 2340  
 agattatcaa aaaggatctt cacctagatc cttttaaagg ccggccgcgg ccgccatcgg 2400  
 cattttcttt tgcgttttta tttgttaact gttaattgtc cttgttcaag gatgctgtct 2460  
 ttgacaacag atgttttctt gcctttgatg ttcagcagga agctcggcgc aaacgttgat 2520  
 tgtttgtctg cgtagaatcc tctgtttgtc atatagcttg taatcacgac attgtttcct 2580

ttcgcttgag	gtacagcgaa	gtgtgagtaa	gtaaagggtta	catcgttagg	atcaagatcc	2640
atTTTTaaca	caaggccagt	tttgttcage	ggcttgtag	ggccagttaa	agaattagaa	2700
acataaccaa	gcatgtaaat	atcgtttagac	gtaatgccgt	caatcgatcat	ttttgatccg	2760
cgggagtcag	tgaacaggta	ccatTTGCCG	ttcatTTTaa	agacgttcgc	gcgttcaatt	2820
tcatctgtta	ctgtgttaga	tgcaatcagc	ggtttcatca	cttttttcag	tggtgaaatca	2880
tcgttttagct	caatcatacc	gagagcgccg	tttgctaact	cagccgtgcg	ttttttatcg	2940
ctttgcagaa	gtttttgact	ttcttgacgg	aagaatgatg	tgcttttgcc	atagtatgct	3000
ttgttaaata	aagattcttc	gccttggtag	ccatcttcag	ttccagtgtt	tgcttcaaat	3060
actaagtatt	tgtggccttt	atcttctacg	tagtgaggat	ctctcagcgt	atgggtgtcg	3120
cctgagctgt	agttgccttc	atcgatgaac	tgctgtacat	tttgatacgt	ttttccgtca	3180
ccgtcaaaga	ttgatttata	atcctctaca	ccgttgatgt	tcaaagagct	gtctgatgct	3240
gatacgttaa	cttgtgcagt	tgtcagtgtt	tgtttgccgt	aatgtttacc	ggagaaatca	3300
gtgtagaata	aacggatttt	tccgtcagat	gtaaatgtgg	ctgaacctga	ccattcttgt	3360
gtttggtcct	ttaggataga	atcatttgca	tccaatttgt	cgctgtcctt	aaagacgcgg	3420
ccagcgtttt	tccagctgtc	aatagaagtt	tgcgccactt	tttgatagaa	catgtaaatc	3480
gatgtgtcat	ccgcattttt	aggatctccg	gctaattgcaa	agacgatgtg	gtagccgtga	3540
tagtttgca	cagtgcgcgt	agcgttttgt	aatggccagc	tgtccaaac	gtccaggcct	3600
tttgcaagaag	agatattttt	aatgtggac	gaatcaaatt	cagaaacttg	atatttttca	3660
tttttttgct	gttcagggat	ttgcagcata	tcatggcgtg	taatatggga	aatgccgtat	3720
gtttccttat	atggcctttg	gttcgtttct	ttcgcaaacg	cttgagttgc	gcctcctgcc	3780
agcagtgcgg	tagtaaaggt	taatactgtt	gcttggtttg	caaacttttt	gatgttcatc	3840
gttcatgtct	ccttttttat	gtactgtgtt	agcggctctg	ttcttcagc	cctcctgttt	3900
gaagatggca	agttagttac	gcacaataaa	aaaagacctt	aaatatgtaa	ggggtgacgc	3960
caaagtatac	actttgccct	ttacacattt	taggtcttgc	ctgctttatc	agtaacaaac	4020
ccgcgcgatt	tacttttcga	cctcattcta	ttagactctc	gtttggattg	caactgggtc	4080
attttcctct	tttgtttgat	agaaaatcat	aaaaggattt	gcagactacg	ggcctaagaa	4140
actaaaaaat	ctatctgttt	cttttcattc	tctgtatttt	ttatagtttc	tggtgcattg	4200
gcataaagtt	gcctttttta	tcacaattca	gaaaatatca	taatatctca	tttcaactaa	4260
taatagtga	cggcaggtat	atgtgatggg	ttaaaaagga	tcggcgcccg	ctcgatttaa	4320
atc						4323

&lt;210&gt; 6

&lt;211&gt; 5860

&lt;212&gt; DNA

&lt;213&gt; Corynebacterium glutamicum

&lt;400&gt; 6

cccggtagca	cgcgctccag	tggttgagac	gcatccgcta	aagccccagg	aacctgtgct	60
agaaagaaaa	cactcctctg	gctaggtaga	cacagtttat	aaaggtagag	ttgagcgggt	120
aactgtcagc	acgtagatcg	aaaggtgcac	aaaggtggcc	ctggctcgta	agaaatatgg	180
cggttcctcg	cttgagagtg	cggaacgcac	tagaaacgtc	gctgaacgga	tcgttgccac	240
caagaaggct	ggaaatgatg	tcgtgggtgt	ctgctccgca	atgggagaca	ccacggatga	300
acttctagaa	cttgacgcgg	cagtgaatcc	cgttccgcca	gctcgtgaaa	tggtatgct	360
cctgactgct	ggtagcgta	tttctaacgc	tctcgtcgcc	atggctattg	agtccttgg	420
cgagaagcc	caatctttca	cgggctctca	ggctggtgtg	ctcaccaccg	agcgccacgg	480
aaacgcacgc	attgttgatg	tcactccagg	tcgtgtgcgt	gaagcactcg	atgagggcaa	540
gatctgcatt	gttgctgggt	tccagggtgt	taataaagaa	acccgcgatg	tcaccacgtt	600
gggtcgtgg	ggttctgaca	ccactgcagt	tgctgtggca	gctgctttga	acgtgatgt	660
gtgtgagatt	tactcggacg	ttgacgggtg	gtataccgct	gaccgcgca	tcgttcctaa	720
tgacacaga	ctggaaaagc	tcagcttcga	agaaatgctg	gaacttgctg	ctgttggtct	780
caagattttg	gtgctgcgca	gtgttgaaata	cgctcgtgca	ttcaatgtgc	cacttcgcgt	840
acgtcgtct	tatagtaatg	atcccggcac	tttgattgcc	ggctctatgg	aggatattcc	900
tgtggaagaa	gcagtcctta	ccgggtgtcgc	aaccgacaag	tccgaagcca	aagtaaccgt	960
tctgggtatt	tccgataaag	caggcgaggc	tcggaagggt	ttccgtgcgt	tggtgcatgc	1020
agaaatcaac	attgacatgg	ttctgcagaa	cgtctcttct	gtagaagacg	gcaccaccga	1080
catcaccttc	acctgccctc	gttccgacgc	ccgcgcgcgc	atggagatct	tgaagaagct	1140
tcaggttcag	ggcaactgga	ccaatgtgct	ttacgacgac	caggtcggca	aagtctccct	1200
cgtgggtgct	ggcatgaagt	ctcaccacag	tgttaccgca	gagttcatgg	aagctctgcg	1260
cgatgtcaac	gtgaacatcg	aattgatttc	cacctctgag	attcgtatct	ccgtgctgat	1320
ccgtgaagat	gatctggatg	ctgctgcacg	tgcattgcat	gagcagttcc	agctgggccc	1380
cgaagacgaa	gccgtcgctt	atgcaggcac	cggacgctaa	agtttttaaag	gagtagtttt	1440

acaatgacca	ccatcgagct	tgttggtgca	accggccagg	tggccaggt	tatgcgcacc	1500
cttttggaag	agcgcaattt	cccagctgac	actgttcgtt	tctttgcttc	cccacgttcc	1560
gcaggccgta	agattgaatt	cgctgacatc	gatgctcttc	tgcgttaatt	aacaattggg	1620
atcctctaga	cccgggattt	aatcgctag	cggtctgcta	aaggaagcgg	aacacgtaga	1680
aagccagtc	gcagaaacgg	tgtgacccc	ggatgaatgt	cagctactgg	gctatctgga	1740
caagggaaaa	cgcaagcgca	aagagaaagc	aggtagcttg	cagtgggctt	acatggcgat	1800
agctagactg	ggcggtttta	tggacagcaa	gcgaaccgga	attgccagct	ggggcgccct	1860
ctggtaagggt	tgggaagccc	tgcaaagtaa	actggatggc	tttcttgccg	ccaaggatct	1920
gatggcgag	gggatcaaga	tctgatcaag	agacaggatg	aggatcggtt	cgcatgattg	1980
aacaagatgg	attgcacgca	ggttctccgg	ccgcttgggt	ggagaggcta	ttcggctatg	2040
actgggcaca	acagacaatc	ggctgctctg	atgccgcgt	gttccggctg	tcagcgagg	2100
ggcgcccggt	tctttttgtc	aagaccgacc	tgtccggtgc	cctgaatgaa	ctgcaggacg	2160
aggcagcgcg	gctatcgtag	ctggccacga	cggtcggttc	ttgcgcagct	gtgctcgacg	2220
ttgtcactga	agcgggaagg	gactggctgc	tattgggcca	agtgcggggg	caggatctcc	2280
tgtcatctca	ccttgctcct	gccgagaaag	tatccatcat	ggctgatgca	atgcggcggc	2340
tgcatacgct	tgatccggct	acctgcccac	tcgaccacca	agcgaacatc	cgcacgcagc	2400
gagcacgtac	tgggatggaa	gccggtcttg	tcgatcagga	tgatctggac	gaagagcctc	2460
aggggctcgc	gccagccgaa	ctgttcgcca	ggctcaaggc	gcgcagtcgc	gacggcgagg	2520
atctcgctgt	gacctatggc	gatgctgtct	tgcgaatat	catggtggaa	aatggccgct	2580
tttctggatt	catcgactgt	ggcgggctgg	gtgtggcgga	ccgctatcag	gacatagcgt	2640
tggctacccg	tgatattgct	gaagagcttg	gcggcgaaatg	ggctgaccgc	ttcctcgtgc	2700
tttacggtat	cgccgctccc	gattcgagc	gcacgcctt	ctatcgctt	cttgacgagt	2760
tcttctgagc	gggactctgg	ggttcgaaat	gaccgaccaa	gcgacgcca	acctgccatc	2820
acgagatttc	gattccaccg	ccgcttctta	tgaagggttg	ggcttcggaa	tcgttttccg	2880
ggacgcccgc	tggatgaccc	tccagcgcgg	ggatctcatg	ctggagtctt	tcgcccacgc	2940
tagcggcgcg	cgcccgccgc	cggtgtgaaa	taccgcacag	atgcgtaagg	agaaaatacc	3000
gcacagggcg	ctcttcgct	tctctgctca	ctgactcgct	gcgctcggtc	gttcggctgc	3060
ggcgagcggt	atcagctcac	tcaaaggcgg	taatacgggt	atccacagaa	tcagggggata	3120
acgcaggaaa	gaacatgtga	gcaaaaggcc	agcaaaaggc	caggaaccgt	aaaaaggccg	3180
cgttgctggc	gtttttccat	aggctccgcc	cccctgacga	gcacacaaa	aatcgacgct	3240
caagtacagag	gtggcgaaac	ccgacaggac	tataaagata	ccaggcggtt	ccccctggaa	3300
gctccctcgt	ggctctcct	gttcgaccc	tgcgcttac	cggataacct	tccgcctttc	3360
tcccttcggg	aagcgtggcg	ctttctcata	gtcacgctg	taggtatctc	agttcggtgt	3420
aggctgctcg	ctccaagctg	ggctgtgtgc	accgaacccc	cgctcagccc	gaccgctgcg	3480
ccttatccgg	taactatcgt	cttgagtcca	accggtaag	acacgactta	tcgccactgg	3540
cagcagccac	tggtaacagg	attagcagag	cgaggtaggt	aggcggtgct	acagagtctt	3600
tgaagtgggtg	gcctaactac	ggctacacta	gaaggacagt	atttggtatc	tgcgctctgc	3660
tgaagccagt	taccttcgga	aaaagagttg	gtagctcttg	atccggcaaa	caaaccaccg	3720
ctggtagcgg	tgggtttttt	gtttgcaagc	agcagattac	gcgcagaaaa	aaaggatctc	3780
aagaagatcc	tttgatcttt	tctacggggt	ctgacgtca	gtggaacgaa	aactcacgtt	3840
aagggatttt	ggtcatgaga	ttatcaaaaa	ggatcttcac	ctagatcctt	ttaaaggccg	3900
gccgcggcgc	ccatcgcat	tttcttttgc	gtttttattt	gttaactggt	aattgtcctt	3960
gttcaaggat	gctgtctttg	acaacagatg	ttttcttgcc	tttgatgttc	agcaggaagc	4020
tggcgcaaaa	cggttgattgt	ttgtctgctg	agaatcctct	gtttgtcata	tagcttgtaa	4080
tcacgacatt	gtttcctttc	gcttgaggta	cagcgaagtg	tgagtaagta	aaggttacat	4140
cgttaggatc	aagatccatt	tttaacacaa	ggccagtttt	gttcagcggc	ttgtatgggc	4200
cagttaaaga	attagaaaca	taaccaagca	tgtaaataatc	gttagacgta	atgccgtcaa	4260
tcgtcatttt	tgatccgcgg	gagtcagtga	acaggtagca	tttgccggtc	attttaaaga	4320
cgttcgcgcg	ttcaatttca	tctgttactg	tgtagatgct	aatcagcggt	ttcatcactt	4380
ttttcagtg	gtaatcatcg	tttagctcaa	tcataccgag	agcgccggtt	gctaactcag	4440
ccgtgcgttt	tttatcgctt	tgcagaagtt	tttgactttc	ttgacgggaag	aatgatgtgc	4500
ttttccata	gtatgctttg	ttaaataaag	attctctgcc	ttggtagcca	tcttcagttc	4560
cagtgtttgc	ttcaaatact	aagtatttgt	ggcctttatc	ttctacgtag	tgaggatctc	4620
tcagcgtag	gttgctgcct	gagctgtagt	tgcttctatc	gatgaactgc	tgtacatttt	4680
gatacgtttt	tccgtcaccg	tcaaagattg	atttataatc	ctctacaccg	ttgatgttca	4740
aagagctgtc	tgatgctgat	acgttaactt	gtgcagttgt	cagtgtttgt	ttgccgtaat	4800
gtttaccgga	gaaatcagtg	tagaataaac	ggatttttcc	gtcagatgta	aatgtggctg	4860
aacctgacca	ttcttgtgtt	tggctcttta	ggatagaatc	atttgcatcg	aatttgtcgc	4920
tgtctttaaa	gacgcggcca	gcgtttttcc	agctgtcaat	agaagtttcg	ccgacttttt	4980
gatagaacat	gtaaatcgat	gtgtcatccg	catttttagg	atctccggct	aatgcaaaga	5040
cgatgtggta	gccgtgatag	tttgcgacag	tgccgtcagc	gttttgtaat	ggccagctgt	5100

```

cccaaacgtc caggcctttt gcagaagaga tatttttaat tgtggacgaa tcaaattcag 5160
aaacttgata tttttcattt ttttgctgtt cagggatttg cagcatatca tggcgtgtaa 5220
tatgggaaat gccgtatgtt tccttatatg gcttttggtt cgtttctttc gcaaacgctt 5280
gagttgcgcc tcctgccagc agtgcggtag taaagggttaa tactgttgct tgttttgcaa 5340
actttttgat gttcatcggt catgtctcct tttttatgta ctgtgttagc ggtctgcttc 5400
ttccagccct cctgtttgaa gatggcaagt tagttacgca caataaaaaa agacctaaaa 5460
tatgtaagggt gtgacgcaa agtatacact ttgcccttta cacattttag gtcttgccgtg 5520
ctttatcagt aacaaaccgg cgcgatttac ttttcgacct cattctatta gactctcggt 5580
tggattgcaa ctggtctatt ttcctctttt gtttgataga aaatcataaa aggatttgca 5640
gactacgggc ctaaagaact aaaaaatcta tctgtttctt ttcattctct gtatttttta 5700
tagtttctgt tgcattgggca taaagttgcc tttttaatca caattcagaa aatatcataa 5760
tatctcattt cactaaataa tagtgaacgg caggtatatg tgatgggtta aaaaggatcg 5820
gcggccgctc gatttaaatac tcgagaggcc tgacgtcggg 5860

```

&lt;210&gt; 7

&lt;211&gt; 38

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Oligonucleotide

&lt;400&gt; 7

```

cggcaccacc gacatcatct tcacctgccc tcgttccg 38

```

&lt;210&gt; 8

&lt;211&gt; 38

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Oligonucleotide

&lt;400&gt; 8

```

cggaacgagg gcagggtgaag atgatgtcgg tgggtgccg 38

```

&lt;210&gt; 9

&lt;211&gt; 1263

&lt;212&gt; DNA

<213> *Corynebacterium glutamicum*

&lt;400&gt; 9

```

gtggccctgg tcgtacagaa atatggcggt tcctcgcttg agagtgcgga acgcattaga 60
aacgtcgctg aacggatcgt tgccaccaag aaggctggaa atgatgtcgt ggttgtctgc 120
tccgcaatgg gagacaccac ggatgaactt ctagaacttg cagcggcagt gaatcccgtt 180
ccgccagctc gtgaaatgga tatgtccttg actgctgggtg agcgtatttc taacgctctc 240
gtcgccatgg ctattgagtc ccttggcgca gaagcccaat ctttcacggg ctctcaggct 300
ggtgtgctca ccaccgagcg ccacggaaac gcacgcattg ttgatgtcac tccaggctcg 360
gtgcgtgaag cactcgatga gggcaagatc tgcattgttg ctgggtttcca ggggtgtaat 420
aaagaaaccc gcgatgtcac cacgttgggt cgtggtgggt ctgacaccac tgcagttgcg 480
ttggcagctg ctttgaacgc tgatgtgtgt gagatttact cggacgttga cgggtgtgat 540
accgctgacc cgcgcacgtg tcctaataga cagaagctgg aaaagctcag cttcgaagaa 600
atgctggaac ttgctgctgt tggctccaag attttgggtg tgcgcagtgt tgaatacgt 660
cgtgcattca atgtgccact tcgcgtacgc tcgtcttata gtaatgatec cggcactttg 720
attgccggct ctatggagga tattcctgtg gaagaagcag tccttaccgg tgtcgcaacc 780
gacaagtccg aagccaaagt aaccgttctg ggtatttccg ataagccagg cgaggctgcg 840
aagggtttcc gtgcgttggc tgatgcagaa atcaacattg acatggttct gcagaacgtc 900
tcttctgtag aagacggcac caccgacatc accttcacct gccctcgctc cgacggccgc 960
cgcgcgatgg agatcttgaa gaagcttcag gttcagggca actggaccaa tgtgctttac 1020
gacgaccagg tcggcaaagt ctccctcggt ggtgctggca tgaagtctca cccagggtgtt 1080
accgcagagt tcatggaagc tctgcgcgat gtcaacgtga acatcgaatt gatttccacc 1140

```



tctgagattc	gtattttccgt	gctgatccgt	gaagatgac	tggatgctgc	tgcacgtgca	1200
ttgcatgagc	agttccagct	ggcgccgcaa	gacgaagccg	tcgtttatgc	aggcaccgga	1260
cgc						1263

&lt;210&gt; 10

&lt;211&gt; 5860

&lt;212&gt; DNA

&lt;213&gt; Corynebacterium glutamicum

&lt;400&gt; 10

cccgttacca	cgcgccccag	tggctgagac	gcacccgcta	aagccccagg	aaccctgtgc	60
agaaagaaaa	cactcctctg	gctaggtaga	cacagtttat	aaaggtagag	ttgagcgggt	120
aactgtcagc	acgtagatcg	aaagggtgcac	aaagggtggcc	ctggctcgta	agaaatatgg	180
cggttcctcg	cttgagagtg	cggaacgcac	tagaaacgct	gctgaacgga	tcgttgccac	240
caagaaggct	ggaaatgatg	tcgtggttgt	ctgctccgca	atgggagaca	ccacggatga	300
acttctagaa	cttgagcggg	cagtgaatcc	cggtccgcca	gctcgtgaaa	tggtatatgt	360
cctgactgct	ggtgagcgta	tttctaacgc	tctcgtegcc	atggctattg	agtcccttgg	420
cgcagaagcc	caatctttca	cggtctctca	ggctggtgtg	ctcaccaccg	agcgccacgg	480
aaacgcacgc	attgttgatg	tactccagg	tcgtgtgcgt	gaagcactcg	atgagggcaa	540
gatctgcatt	gttgctggtt	tccaggggtg	taataaagaa	acccgcgatg	tcaccacgtt	600
gggtcgtggt	ggttctgaca	ccactgcagt	tgcgttgcca	gctgctttga	acgctgatgt	660
gtgtgagatt	tactcggacg	ttgacgggtg	gtataccgct	gacccgcgca	tcgttcctaa	720
tgcacagaag	ctggaaaagc	tcagcttcga	agaaatgctg	gaacttgctg	ctgttggtct	780
caagattttg	gtgctgcgca	gtgttgaata	cgctcgtgca	ttcaatgtgc	cacttcgcgt	840
acgctcgtct	tatagtaatg	atcccggcac	tttgattgcc	ggctctatgg	aggatattcc	900
tgtggaagaa	gcagtcctta	ccggtgtcgc	aaccgacaag	tccgaagcca	aagtaaccgt	960
tctgggtatt	tcgataaagc	caggcgaggc	tgcgaagggt	ttccgtgcgt	tggctgatgc	1020
agaaatcaac	attgacatgg	ttctgcagaa	cgctctctct	gtagaagacg	gcaccaccga	1080
catcatcttc	acctgccctc	gttccgacgg	ccgcgcgcgc	atggagatct	tgaagaagct	1140
tcaggttcag	ggcaactgga	ccaatgtgct	ttacgacgac	caggctcgga	aagtctccct	1200
cgtgggtgct	ggcatgaagt	ctcaccacgg	tgttaccgca	gagttcatgg	aagctctgcg	1260
cgatgtcaac	gtgaacatcg	aattgatitc	cacctctgag	attcgtatct	ccgtgctgat	1320
ccgtgaagat	gatctggatg	ctgctgcacg	tgcattgcat	gagcagttcc	agctgggcgg	1380
cgaagacgaa	gocgtcggtt	atgcaggcac	cggacgctaa	agttttaaag	gagtagtttt	1440
acaatgacca	ccatcgagct	tggtggtgca	accggccagg	tcggccaggt	tatggcgacc	1500
cttttggaag	agcgcaattt	cccagctgac	actgttcggt	tcctttgctt	cccacgttcc	1560
gcaggccgta	agattgaatt	cgctgcacat	gatgctcttc	tgcgttaatt	aacaattggg	1620
atcctctaga	cccgggattt	aaatcgctag	cggtctgcta	aaggaaagcg	aacacgtaga	1680
aagccagtc	gcagaaacgg	tgctgacccc	ggatgaatgt	cagctactgg	gctatctgga	1740
caagggaaaa	cgcaagcgca	aagagaaagc	aggtagcttg	cagtgggctt	acatggcgat	1800
agctagactg	ggcggtttta	tggacagcaa	gcgaaccgga	attgccagct	ggggcgccct	1860
ctggtaagg	tgggaagccc	tgcaaagtaa	actggatggc	tttcttgccg	ccaaggatct	1920
gatggcgag	gggatcaaga	tctgatcaag	agacaggatg	aggatcggtt	cgcatgattg	1980
aacaagatgg	attgcacgca	ggttctccgg	ccgctgggtg	ggagaggcta	ttcggctatg	2040
actgggcaca	acagacaatc	ggctgctctg	atgccgcgct	gttcgggctg	tcagcgaggg	2100
ggcgcccggt	tctttttgtc	aagaccgacc	tgtccggtgc	cctgaatgaa	ctgcaggacg	2160
aggcagcgcg	gctatcgtgg	ctggccacga	cggtcggttc	ttgctgcagc	gtgctcgacg	2220
ttgtcactga	agcgggaagg	gactggctgc	tattgggcga	agtgcggggg	caggatctcc	2280
tgatcatctca	ccttgctcct	gccgagaaa	tatccatcat	ggctgatgca	atgcccgggc	2340
tgcatacgtc	tgatccggct	acctgcccac	tcgaccacca	agcgaaacat	cgcatcgagc	2400
gagcacgtac	tcggatggaa	gccggctctt	tcgatcagga	tgatctggac	gaagagcatc	2460
aggggctcgc	gccagccgaa	ctgttcgcca	ggctcaaggc	gcgcagtcgc	gacggcgagg	2520
atctcgtcgt	gacctatggc	gatgctgctc	tgcgaatat	catgggtgaa	aatggcgctg	2580
tttctggatt	catcgactgt	ggccggctgg	gtgtggcgga	ccgctatcag	gacatagcgt	2640
tggctacccg	tgatattgct	gaagagcttg	gcggcgaaat	ggctgaccgc	ttcctcgtgc	2700
tttacggtat	cgccgctccc	gattcgcagc	gcacgcctt	ctatcgctt	cttgacgagt	2760
tcttctgagc	gggactctgg	ggttcgaaat	gaccgaccaa	gcgacgcca	acctgccatc	2820
acgagatttc	gattccaccg	ccgccttcta	tgaaagggtt	ggcttcggaa	tcgttttccg	2880
ggacgcgggc	tggatgatcc	tccagcgcg	ggatctcatg	ctggagttct	tcgcccacgc	2940
tagcggcgcg	ccggccggcc	cggtgtgaaa	taccgcacag	atgcgtaagg	agaaaatacc	3000
gcacagggcg	ctcttcgctc	tcctcgtcga	ctgactcgct	gcgctcggtc	gttcggctgc	3060

```

ggcgagcggt atcagctcac tcaaaggcgg taatacgggt atccacagaa tcaggggata 3120
acgcaggaaa gaacatgtga gcaaaaggcc agcaaaaggc caggaaccgt aaaaaggccg 3180
cggttgctggc gtttttccat aggctccgcc cccctgacga gcatcacaaa aatcgacgct 3240
caagtcagag gtggcgaaac ccgacaggac tataaagata ccaggcggtt cccctggaa 3300
gctccctcgt gcgctctcct gttccgacct tgcgcttac cggataacct tccgccttct 3360
tcccttcggg aagcgtggcg ctttctcata gctcacgctg taggtatctc agttcgggtg 3420
aggctcgttcg ctccaagctg ggctgtgtgc acgaaccccc cgttcagccc gaccgctgcg 3480
ccttatccgg taactatcgt cttgagtcca acccggttaag acacgactta tcgccactgg 3540
cagcagccac tggttaacagg attagcagag cgagggtatgt aggcggtgct acagagttct 3600
tgaagtgggt gcctaactac ggctacacta gaaggacagt atttggtatc tgcgctctgc 3660
tgaagccagt taccttcgga aaaagagttg gtagctcttg atccggcaaa caaaccaccg 3720
ctggtagcgg tggttttttt gtttgcaagc agcagattac gcgcagaaaa aaaggatctc 3780
aagaagatcc tttgatcttt tctacggggt ctgacgctca gtggaacgaa aactcacgtt 3840
aagggatttt ggtcatgaga ttatcaaaaa ggatcttcac ctagatcctt ttaaaggccg 3900
gccgcggccg ccacgcggcat tttcttttgc gtttttatct gtttaactgtt aattgtcctt 3960
gttcaaggat gctgtctttg acaacagatg ttttcttgcc tttgatgttc agcaggaagc 4020
tcggcgcaaa cgttgattgt ttgtctgctt agaactcctt gtttgtcata tagcttgtaa 4080
tcacgacatt gtttccttct gcttgaggta cagcgaagtg tgagtaagta aaggttacat 4140
cgttaggatc aagatccatt tttaacacaa ggccagtttt gttcagcggc ttgtatgggc 4200
cagttaaaga attagaaaca taaccaagca tgtaaatac gtttagacgt atgccgtcaa 4260
tcgtcatttt tgatccgcgg gagtcaagtga acaggtacca tttgccgttc attttaaaga 4320
cgttcgcgcg ttcaatttca tctgttactg tgttagatgc aatcagcggg ttcacactt 4380
ttttcagtgt gtaatcatcg tttagctcaa tcataccgag agcgccggtt gtaactcag 4440
ccgtgcgttt tttatcgctt tgcagaagtt tttgacttct ttgacggaag aatgatgtgc 4500
ttttgccata gtatgctttg ttaaataaag attcttcgcc ttggtagcca tcttcagttc 4560
cagtgtttgc ttcaaatact aagtatttgt ggcctttatc ttctacgtag tgaggatctc 4620
tcagcgtatg gttgtcgctt gagctgtagt tgccttcac gatgaactgc tgtacatttt 4680
gatacgtttt tccgtcaccc tcaaagattg atttataatc ctctacaccg ttgatgttca 4740
aagagctgtc tgatgctgat acgttaactt gtgcagttgt cagtgtttgt ttgccgtaat 4800
gtttaccgga gaaatcagt tagaataaac ggatttttcc gtcagatgta aatgtggctg 4860
aacctgacca ttcttggtt tggcttttta ggatagaatc atttgcatcg aatttgtcgc 4920
tgtctttaa gacgcggcca gcgtttttcc agctgtcaat agaagtttcg ccgacttttt 4980
gatagaacat gtaaatacgt gtgtcatccg catttttagg atctccggct aatgcaaaga 5040
cgatgtggta gccgtgatag tttgcgacag tgccgtcagc gttttgtaat ggccagctgt 5100
cccaaacgct caggcctttt gcagaagaga tatttttaat tgtggacgaa tcaaattcag 5160
aaacttgata ttttccattt ttttgctgtt cagggatttg cagcatatca tggcgtgtaa 5220
tatgggaaat gccgtatgtt tcttatatg gcttttggtt cgtttcttct gcaaacgctt 5280
gagttgcgcc tctgccagc agtgcggtag taaaggttaa tactgttgct tgttttgcaa 5340
actttttgat gttcatcggt catgtctcct tttttatgta ctgtgttagc ggtctgcttc 5400
ttccagccct cctgtttgaa gatggcaagt tagttacgca caataaaaaa agacctaaaa 5460
tatgtaagggt gtgacgcaa agtatacact ttgcccttta cacattttag gtcttgccgt 5520
ctttatcagt aacaaacccg cgcgatttac ttttcgacct cattctatta gactctcggt 5580
tggattgcaa ctggtctatt ttcctctttt gttgataga aaatcataaa aggatttgca 5640
gactacgggc ctaaagaact aaaaaatcta tctgttcttt ttcatctctt gtatttttta 5700
tagtttctgt tgcattggca taaagttgcc tttttaatca caattcagaa aatatcataa 5760
tatctcattt cactaaataa tagtgaacgg caggtatatg tgatgggtta aaaaggatcg 5820
gcggccgctc gatttaaata tcgagaggcc tgacgtcggg 5860

```

&lt;210&gt; 11

&lt;211&gt; 30

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Oligonucleotide

&lt;400&gt; 11

ggccgctagc gtttttggtc accccggaat

30

&lt;210&gt; 12

&lt;211&gt; 30

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Oligonucleotide

&lt;400&gt; 12

ggcctctaga acacgcttgg accagtgcctt

30

&lt;210&gt; 13

&lt;211&gt; 5720

&lt;212&gt; DNA

&lt;213&gt; Corynebacterium glutamicum

&lt;400&gt; 13

```

ggtcgactct agaggatccc cgggtaccga gctcgaattc actggccgctc gttttacaac 60
gtcgtgactg ggaaaaccct ggcgttaccc aacttaatcg ccttgacgca catccccctt 120
tcgccagctg gcgtaatagc gaagaggccc gcaccgatcg cccttcccaa cagttgcgca 180
gcctgaatgg cgaatggcga taagctagct tcacgctgcc gcaagcactc agggcgcaag 240
ggctgctaaa ggaagcggaa cacgtagaaa gccagtccgc agaaacggtg ctgaccccg 300
atgaatgtca gctactgggc tatctggaca agggaaaacg caagcgcaaa gagaaagcag 360
gtagcttgca gtgggcttac atggcgatag ctagactggg cggttttatg gacagcaagc 420
gaaccggaat tgccagctgg ggcgccctct ggtaagggtg ggaagccctg caaagtaaac 480
tggatggctt tcttgccgcc aaggatctga tggcgaggg gatcaagatc tgatcaagag 540
acaggatgag gatcggttctg catgattgaa caagatggat tgcacgcagg ttctccgcc 600
gcttgggtgg agaggctatt cggctatgac tgggcacaac agacaatcgg ctgctctgat 660
gccgccgtgt tccggctgtc agcgagggg cgcccggttc tttttgtcaa gaccgacctg 720
tccggtgccc tgaatgaact ccaagacgag gcagcgcggc tatcgtggct ggccacgacg 780
ggcggttcctt gcgcagctgt gctcgactgt gtcactgaag cgggaaggga ctggctgcta 840
ttgggcgaag tgccggggca ggatctcctg tcatctcacc ttgctcctgc cgagaaaagta 900
tccatcatgg ctgatgcaat gcggcggtg catacgcttg atccggctac ctgcccattc 960
gaccaccaag cgaaacatcg catcgagcga gcacgtactc ggatggaagc cggctctgtc 1020
gatcaggatg atctggacga agagcatcag gggctcgcgc cagccgaact gttcgccagg 1080
ctcaaggcgc ggaatgccga cggcgaggat ctcgctgtga cccatggcga tgcctgcttg 1140
ccgaatatca tggtggaaaa tggcgctttt tctggattca tcgactgtgg ccggctgggt 1200
gtggcggaac gctatcagga catagcggtt gctaccgctg atattgctga agagcttggc 1260
ggcgaatggg ctgaccgctt cctcgtgctt tacggtatcg ccgctcccga ttcgcagcgc 1320
atcgccctct atcgccctt tgacgagttc ttctgagcgg gactctgggg ttctgtagag 1380
gatcgatcct ttttaaccca tcacatatac ctgccgttca ctattattta gtgaaatgag 1440
atattatgat attttctgaa ttgtgattaa aaaggcaact ttatgcccac gcaacagaaa 1500
ctataaaaaa tacagagaat gaaaagaaac agatagattt tttagttctt taggccccta 1560
gtctgcaaat ccttttatga ttttctatca aacaaaagag gaaaatagac cagttgcaat 1620
ccaaacgaga gtctaataga atgaggtcga aaagtaaatc gcgcgggttt gttactgata 1680
aagcaggcaa gacctaaaat gtgtaaggga caaagtgtat actttggcgt cacccttac 1740
atattttagg tcttttttta ttgtgcgtaa ctaacttgcc atcttcaaac aggagggctg 1800
gaagaagcag accgctaaca cagtacataa aaaaggagac atgaacgatg aacatcaaaa 1860
agtttgcaaa acaagcaaca gtattaacct ttactaccgc actgctggca ggaggcgcaa 1920
ctcaagcgtt tgcgaaagaa acgaacaaa agccatataa ggaaacatac ggcatttccc 1980
atattacacg ccatgatatg ctgcaaatcc ctgaacagca aaaaaatgaa aaatatcaag 2040
tttctgaatt tgattcgtcc acaattaaaa atatctcttc tgcaaaaaggc ctggacgttt 2100
gggacagctg gccattacaa aacgctgacg gcactgtcgc aaactatcac ggctaccaca 2160
tcgtctttgc attagccgga gatcctaaaa atgcggatga cacatcgatt tacatgttct 2220
atcaaaaagt cggcgaaact tctattgaca gctggaaaaa cgctggccgc gtctttaaag 2280
acagcgacaa attcgtatgca aatgattcta tctaaaaga ccaaacacaa gaatggtcag 2340
gttcagccac atttacatct gacggaaaaa tccgtttatt ctacactgat ttctccggtg 2400
aacattacgg caaacaacaa ctgacaactg cacaagttaa cgtatcagca tcagacagct 2460
ctttgaacat caacggtgta gaggattata aatcaatctt tgacggtgac ggaaaaacgt 2520
atcaaaatgt acagcagttc atcgatgaag gcaactacag ctgaggcgac aaccatacgc 2580
tgagagatcc tctactacgta gaagataaag gccacaaata cttagtattt gaagcaaca 2640
ctggaactga agatggctac caaggcgaag aatctttatt taacaaagca tactatggca 2700
aaagcacatc attcttccgt caagaaagtc aaaaacttct gcaaagcgat aaaaaacgca 2760

```

```

cggctgagtt agcaaacggc gctctcggtg tgattgagct aaacgatgat tacacactga 2820
aaaaagtgat gaaacccgtg attgcatcta acacagtaac agatgaaatt gaacgcgcga 2880
acgtctttaa aatgaacggc aaatggtacc tgttactga ctcccgcgga tcaaaaatga 2940
cgattgacgg cattacgtct aacgatattt acatgcttgg ttatgtttct aattctttaa 3000
ctggcccata caagccgctg aacaaaactg gccttgtgtt aaaaatggat cttgatccta 3060
acgatgtaac ctttacttac tcacacttcg ctgtacctca agcgaaagga aacaatgtcg 3120
tgattacaag ctatatgaca aacagaggat tctacgcaga caaacaatca acgtttgcgc 3180
cgagcttcct gctgaacatc aaaggcaaga aaacatctgt tgtcaaagac agcatccttg 3240
aacaaggaca attaacagtt aacaaataaa aacgcaaaag aaaatgccga tgggtaccga 3300
gcgaaatgac cgaccaagcg acgccaacc tgccatcacg agatttcgat tccaccgccg 3360
ccttctatga aaggttgggc ttcggaatcg ttttcggga cgccctcgcg gacgtgctca 3420
tagtccacga cgcccgatg tttgtagccc tggccgacgg ccagcaggta ggccgacagg 3480
ctcatgccgg ccgcccgcgc cttttcctca atcgctcttc gttcgtctgg aaggcagtac 3540
accttgatag gtgggctgcc cttcctgggt ggcttgggtt catcagccat ccgcttgccc 3600
tcactgttta cgccggcggt agccggccag cctcgagag caggattccc gttgagcacc 3660
gccaggtgcg aataaggagc agtgaagaag gaacaccgcg tcgcgggtgg gcctacttca 3720
cctatcctgc cggctgacg ccgttggaata caccaaggaa agtctacacg aaccttttg 3780
caaaatcctg tatatcgtgc gaaaaaggat ggataaccg aaaaaatcgc tataatgacc 3840
ccgaagcagg gttatgcagc ggaaaagcgc tgcttccttg ctgttttggt gaatatctac 3900
cgactggaaa caggcaaatg caggaaatta ctgaactgag gggacaggcg agagacgatg 3960
ccaaagagct cctgaaaatc tcgataactc aaaaaatag cccggtagtg atcttatttc 4020
attatggtga aagttggaac ctcttacgtg ccgatcaacg tctcattttc gccaaaagtt 4080
ggcccagggc ttcccgggtat caacagggac accaggattt atttattctg cgaagtgatc 4140
ttccgtcaca ggtatattat cggcgcaaaag tgcgctgggt gatgctgcca acttactgat 4200
ttagtgtatg atggtgtttt tgaggtgctc cagtggcttc tgtttctatc agtcctgaa 4260
aatctcgata actcaaaaaa tacgcccggg agtgatctta tttcattatg gtgaaagtgt 4320
gaacctctta cgtgccgac aacgtctcat tttcgccaaa agttggccca gggttcccg 4380
gtatcaacag ggacaccagg atttatttat tctgcgaagt gatcttccgt cacaggattt 4440
tattcggcgc aaagtgcgtc ggggtgatgt gccaaactac tgatttagtg tatgatggtg 4500
tttttgaggt gctccagtg cttctgtttc tatcagggtt ggatgatcct ccagcgcggg 4560
gatctcatgc tggagttctt cggccacccc aaaaggatct aggtgaagat cctttttgat 4620
aatctcatga ccaaaatccc ttaacgtgag ttttcgttcc actgagcgtc agaccccgt 4680
gaaaagatca aaggatcttc ttgagatcct ttttttctgc gcgtaatctg ctgcttgcaa 4740
acaaaaaaac caccgctacc agcggtggtt tgtttgcgg atcaagagct accaactctt 4800
ttccgaagg taactggctt cagcagagcg cagataccaa atactgttct tctagtgtag 4860
ccgtagttag gccaccactt caagaactct gtagcacgcg ctacatacct cgctctgcta 4920
atcctgttac cagtggctgc tgccagtggc gataagtcgt gtcttaccgg gttggactca 4980
agacgatagt taccggataa ggcgcagcgg tcgggctgaa cgggggggtt gtgcacacag 5040
cccagcttgg agcgaacgac ctacaccgaa ctgagatacc tacagcgtga gctatgagaa 5100
agcgccacgc tccccgaagg gagaaaggcg gacaggatct cggtaagcgg cagggtcgga 5160
acaggagagc gcacgagggg gcttccaggg ggaaacgcct ggtatcttta tagtctgtc 5220
gggtttcgcc acctctgact tgagcgtcga tttttgtgat gctcgtcagg gggcgaggc 5280
ctatgaaaa acgccagcaa cgcggccttt ttacggttcc tggccttttg ctggcctttt 5340
gctcacatgt tcttctcctg gttatcccc ttactgtggg ataaccgtat taccgccttt 5400
gagttagctg ataccgctcg ccgcagccga acgaccgagc gcagcgagtc agtgagcgag 5460
gaagcggaag agcgcccaat acgcaaaccg cctctcccc cgcgttggcc gattcattaa 5520
tgcagctggc acgacaggtt tcccactgg aaagcgggca gtgagcgcaa cgcaattaa 5580
gtgagttagc tactcatta ggaccccag gctttacact ttatgcttcc ggctcgtag 5640
ttgtgtggaa ttgtgagcgg ataacaattt cacacaggaa acagctatga ccatgattac 5700
gccaaagctt catgcctgca 5720

```

&lt;210&gt; 14

&lt;211&gt; 6680

&lt;212&gt; DNA

&lt;213&gt; Corynebacterium glutamicum

&lt;400&gt; 14

```

ggctgactct agaacacgct tggaccagtg cttggcgctg ccaactggtg cgaaaccacc 60
gtgaagtaca ccagcgacca gaactctgag gttactttcg tgccgtttga aaatggcatc 120
atggtgtctt cccctgaggc tggaaactcac ggctgtggg gcgcaatcgg tgacgcgtgg 180
gctcagcagg gcgctgacct tggccctctg ggacttccaa ccagtaatga atacaccgtt 240

```

```

ggcgaacagc ttcgtgttga tttccagaat gggttacatca cttacgattc tgcgactggc 300
caggcaagca ttcagctgaa ctagtctcaa ttagagccga aaaccccgct accttccctg 360
aggaggcggg gttttctcca atcaaaagcc aattaaaggc cgacccaaat cagctaggcc 420
tggtcataag aatgctccac tgccctatcc cattcggcat agcgacgttc gcgctcttct 480
tcgctcatgt cagggttcca gactttcttc actgcaataa gtttttcgat ctcgtcagtt 540
gttttgaaga atccagagcc gagacctgca gcgaatgcga cgccgacggc ggtggtttct 600
acgtcctcga gacgttggac gtcgatgccg aggaagtcgg cttgcatttg catgaggagg 660
tcattttcca ccatcgcacc gtcgacgcgg agggattcga gggctttgcc tgcgtctttg 720
gccatggcgt ccacaacttc gcgggtttgg aaggcggttg cttcaaggac tgcgcgggcg 780
atgtgtttgc ggttggaaca acgggtgagg cctgtaatga cgccacgagc atcggggcgc 840
caacgtgggtg cgaacagtcc ggtgaatgct gggacaacat gaacgccacc gttgtcttcg 900
acttctcggg cgaggttttc aatcgctggg gcgttgggga ttagctgtag gttgtcgcgc 960
agccactgca ccaaggaacc gccatggat acggaacctt ccagcgcgta gaccggagcg 1020
gatccttccc gttgatagga gatggtggac agcaggccgt gctcggaaat cttcaacgag 1080
tgccgggtgt tcctagcag gaagaggccg gtgcgtagg tatttttagc agcaccttcg 1140
tggaaatccg cctgacaaa aacgctagct tcacgtgcc gcaagcactc agggcgcaag 1200
ggctgctaaa ggaagcggaa cacgtagaaa gccagtcgc agaaacggtg ctgaccccg 1260
atgaatgtca gctactgggc tatctggaca agggaaaacg caagcgcaaa gagaaagcag 1320
gtagcttgca gtgggcttac atggcgatag ctgactggg cggttttatg gacagcaagc 1380
gaaccggaat tgccagctgg ggcgccctct ggtaagggtg ggaagccctg caaagtaaac 1440
tggatggctt tcttgccgcc aaggatctga tggcgagggg gatcaagatc tgatcaagag 1500
acaggatgag gatcgtttcg catgattgaa caagatggat tgcacgcagg ttctccggcc 1560
gcttgggtgg agaggctatt cggctatgac tgggcacaa agacaatcgg ctgctctgat 1620
gccgcggtgt tccggctgtc agcgcagggg gcgccggttc ttttgtcaa gaccgacctg 1680
tccggtgccc tgaatgaact ccaagacgag gcagcgcgcc tatcgtggct ggccacgacg 1740
ggcgttcctt gcgcagctgt gctcgacgtt gtcactgaag cgggaaggga ctggctgcta 1800
ttgggcgaag tgccggggca ggatctcctg tcatctcacc ttgctcctgc cgagaaagta 1860
tccatcatgg ctgatgcaat gcggcggtcg ctaacgcttg atccggctac ctgcccattc 1920
gaccaccaag cgaaacatcg catcgagcga gcacgtactc ggatggaagc cggctctgtc 1980
gatcaggatg atctggacga agagcatcag gggctcgcgc cagccgaact gttcgcagg 2040
ctcaaggcgc ggatgccga cggcgaggat ctgctcgtga cccatggcga tgcttcttg 2100
ccgaatatca tgggtgaaaa tggccgcttt tctggattca tcgactgtgg ccggtgggt 2160
tgggcggacc gctatcagga catagcgttg gctaccgtg atattgctga agagcttggc 2220
ggcgaatggg ctgaccgctt cctcgtgctt tacggtatcg ccgctccga ttccgcagcg 2280
atcgcttctt atcgcttctt tgacgagttc ttctgagcgg gactctgggg ttctgctagag 2340
gatcgatcct ttttaaccca tcacatatac ctgcccgttc ctattattta gtgaaatgag 2400
atattatgat attttctgaa ttgtgattaa aaaggcaact ttatgccc atgcaacagaaa 2460
ctataaaaaa tacagagaat gaaaagaaac agatagattt tttagttct taggcccgta 2520
gtctgcaaat ctttttatga ttttctatca aacaaaagag gaaaatagac cagttgcaat 2580
ccaaacgaga gtctaataga atgaggtcga aaagtaaatc gcgcgggttt gttactgata 2640
aagcaggcaa gacctaataa gtgtaaaggg caaagtgtat actttggcgt cacccttac 2700
atattttagg tcttttttta ttgtgcgtaa ctaactggcc atcttcaaac aggaggctg 2760
gaagaagcag accgctaaca cagtcataaa aaaaggagac atgaacgatg aacatcaaaa 2820
agtttgcaaa acaagcaaca gtattaacct ttactaccgc actgctggca ggaggcgcaa 2880
ctcaagcgtt tgcgaaagaa acgaaccaa agccatataa ggaaacatac ggcatttccc 2940
atattacag ccattgatag ctgcaaatcc ctgaacagca aaaaaatgaa aaatatcaag 3000
tttctgaatt tgattcgtcc acaattaaaa atatctcttc tgcaaaaggc ctggacgttt 3060
gggacagctg gccattacaa aacgctgacg gcactgtcgc aaactatcac ggctaccaca 3120
tcgtctttgc attagccgga gatcctaaaa atgcggaatga cacatcgatt tacatgttct 3180
atcaaaaagt cggcgaaact tctattgaca gctggaaaaa cgctggccgc gtctttaaag 3240
acagcgacaa attcgtatga aatgattcta tctaaaaaga ccaaacacaa gaatggtcag 3300
gttcagccac atttcatct gacggaaaaa tccgtttatt ctacactgat ttctccggt 3360
aacattacgg caaacaacaa ctgacaactg cacaagttaa cgtatcagca tcagacagct 3420
ctttgaacat caacggtgta gaggattata aatcaatctt tgacggtgac ggaaaaacgt 3480
atcaaaatgt acagcagttc atcgatgaag gcaactacag ctcaggcgac aaccatacgc 3540
tgagagatcc tcaactacgta gaagataaag gccacaaata cttagtattt gaagcaaca 3600
ctggaactga agatggctac caaggcgaag aatctttatt taacaaagca tactatggca 3660
aaagcacatc attcttccgt caagaaagtc aaaaacttct gcaaagcgat aaaaaacgca 3720
cggctgagtt agcaaacggc gctctcggtg tgattgagct aaacgatgat tacacactga 3780
aaaaagtgat gaaaccgctg attgcatcta acacagtaac agatgaaatt gaacgcgcga 3840
acgtctttaa aatgaacggc aaatggtacc tgttcactga ctcccgcgga tcaaaaatga 3900

```

```

cgattgacgg cattacgtct aacgatattt acatgcttgg ttatgtttct aattctttta 3960
ctggcccata caagccgctg aacaaaactg gccttgtgtt aaaaatggat cttgatccta 4020
acgatgtaac ctttacttac tcacacttcg ctgtacctca agcgaaagga aacaatgtcg 4080
tgattacaag ctatatgaca aacagaggat tctacgcaga caaacaatca acgtttgcgc 4140
cgagcttcct gctgaacatc aaaggcaaga aaacatctgt tgtcaaagac agcatccttg 4200
aacaaggaca attaacagtt aacaaataaa aacgcaaaaag aaaatgccga tgggtaccga 4260
gcgaaaatgac cgaccaagcg acgcccacc tgccatcacg agatttcgat tccaccgcgc 4320
ccttctatga aagggtgggc ttcggaatcg ttttcggga cgccctcgcg gacgtgctca 4380
tagtccacga cgcccgatg tttgtagccc tggccgacgg ccagcaggta ggccgacagg 4440
ctcatgccgg ccgcccgcgc cttttcctca atcgctcttc gttcgtctgg aaggcagtac 4500
accttgatag gtgggctgcc cttcctgggt ggcttgggtt catcagccat ccgcttgccc 4560
tcatctgtta cgccggcggt agccggccag cctcgcagag caggattccc gttgagcacc 4620
gccagggtgc aataaggga agtgaagaag gaacaccgc tcgcggtgg gcctacttca 4680
cctatcctgc ccggtgacg ccgttggata caccaaggaa agtctacacg aaccctttgg 4740
caaatcctg tatatcgtgc gaaaaaggat ggatataccg aaaaaatcgc tataatgacc 4800
ccgaagcagg gttatgcagc ggaaaagcgc ctgttttggtg gaatatctac 4860
cgactggaaa caggcaaatg caggaaatta ctgaactgag gggacaggcg agagacgatg 4920
ccaaagagct cctgaaaatc tcgataactc aaaaaatacg ccggtagtgt atcttatttc 4980
attatggtga aagtgggaac ctcttacgtg ccgatcaacg tctcattttc gccaaaagtt 5040
ggcccagggg ttcccgggtat caacaggggac accaggattt atttattctg cgaagtgatc 5100
ttccgtcaca ggtattttat cgccgcaaaag tgcgtcgggt gatgctgcca acttactgat 5160
ttagtgatg atggtgtttt tgagggtgctc cagtggcttc tgtttctatc agctcctgaa 5220
aatctcgata actcaaaaaa tacgcccgggt agtgatctta tttcattatg gtgaaagttg 5280
gaacctctta cgtgccgatc aacgtctcat tttcgccaaa agttggccca gggcttcccg 5340
gtatcaacag ggacaccagg atttatttat tctgcgaagt gatcttccgt cacaggattt 5400
tattcggcgc aaagtgcgtc ggggtgatgt gccaaacttac tgatttagtg tatgatggtg 5460
tttttgaggt gctccagtgg cttctgtttc tatcagggtt ggatgatcct ccagcgcggg 5520
gatctcatgc tggagttctt cgcccacccc aaaaggatct aggtgaagat cctttttgat 5580
aatctcatga ccaaaatccc ttaacgtgag ttttcgttcc actgagcgtc agaccccgta 5640
gaaaagatca aaggatcttc ttgagatcct ttttttctgc gcgtaatctg ctgcttgcaa 5700
acaaaaaac caccgctacc agcgggtggt tgtttgccc atcaagagct accaactctt 5760
tttccgaagg taactggctt cagcagagcg cagataccaa atactgttct tctagtgtag 5820
ccgtagttag gccaccactt caagaactct gtacacccg ctacatacct cgctctgcta 5880
atcctgttac cagtggctgc tgccagtggc gataaagtcgt gtcttaccgg gttggactca 5940
agacgatagt taccggataa ggcgcagcgg tcgggctgaa cgggggggtc gtgcacacag 6000
cccagcttgg agcgaacgac ctacaccgaa ctgagatacc tacagcgtga gctatgagaa 6060
agcgcacgc ttcccgaagg gagaaaggcg gacaggatc cggtaaagcg cagggtcgga 6120
acaggagagc gcacgaggga gcttccaggg ggaaacgcct ggtatcttta tagtctgtc 6180
gggtttcgcc acctctgact tgagcgtcga tttttgtgat gctcgtcagg ggggcccagg 6240
ctatggaaaa acgccagcaa cgcgcccttt ttacggttcc tggccttttg ctggcctttt 6300
gctcacatgt tctttcctgc gttatcccc gattctgtgg ataaccgtat taccgccttt 6360
gagtgaagct ataccctcg ccgcagcga acgaccgag gcagcagagt agtcgcagag 6420
gaagcggaa agcgcccaat acgcaaacgc cgtctcccc cgcgttggcc gattcattaa 6480
tgcagctggc acgacaggtt tcccagctgg aaagcgggca gtgagcgcaa cgcaattaat 6540
gtgagttagc tcactcatta ggcaccccag gctttacact ttatgcttcc ggctcgtatg 6600
ttgtgtggaa ttgtgagcgg ataacaattt cacacaggaa acagctatga ccatgattac 6660
gccaagcttg catgcctgca 6680

```

&lt;210&gt; 15

&lt;211&gt; 6272

&lt;212&gt; DNA

<213> *Corynebacterium glutamicum*

&lt;400&gt; 15

```

ggtcgactct agaacacgct tggaccagtg cttggcgctg ccactgggtg cgaaaccacc 60
gtgaagtaca ccagcgacca gaactctgag gttactttcg tgccgtttga aaatggcatc 120
atggtgtctt cccctgagggc tggaaactcac ggcctgtggg gcgcaatcgg tgacgcgtgg 180
gctcagcagg gcgctgacct tggccctctg ggacttccaa ccagtaatga atacaccgtt 240
ggcgaacagc ttctgtgttg tttccagaat gggtacatca cttacgattc tgcgactggc 300
caggcaagca ttcagctgaa ctagtctcaa ttagagccga aaaccccgct acctccctg 360
aggaggcggg gttttctcca atcaaaagcc aattaaaggc cgacccaaat cagctaggcc 420

```

tggtcataag	aatgctccac	tgccctatcc	cattcggcat	agcgacgttc	gcgctcttct	480
tcgctcatgt	cagggttcca	gactttcttc	actgcaataa	gtttttcgat	ctcgctcagtt	540
gttttgaaga	atccagagcc	gagacctgca	gcgaatgcga	cgccgacggc	ggtgggttct	600
acgtcctcga	gggatccttc	ccgttgatag	gcgatgggtg	acagcaggcc	gtgctcggaa	660
atcttcaacg	aggtgccggg	gttcacagc	aggaagaggc	cggtgccgta	ggtattttta	720
gcagcacctt	cgtggaatcc	gccctgacca	aaaacgctag	cttcacgctg	ccgcaagcac	780
tcagggcgca	agggctgcta	aaggaaagcg	aacacgtaga	aagccagtcc	gcagaaacgg	840
tgctgacccc	ggatgaatgt	cagctactgg	gctatctgga	caagggaata	cgcaagcgca	900
aagagaaagc	aggtagcttg	cagtgggctt	acatggcgat	agctagactg	ggcgggtttta	960
tggaacagcaa	gcgaaccgga	attgccagct	ggggcgccct	ctggtaaggt	tggaagccc	1020
tgcaaagtaa	actggatggc	tttcttgccg	ccaaggatct	gatggcgag	gggatcaaga	1080
tctgatcaag	agacaggatg	aggatcgttt	cgcatgattg	aacaagatgg	attgcacgca	1140
ggttctccgg	ccgcttgggt	ggagaggcta	ttcggctatg	actgggcaca	acagacaatc	1200
ggctgctctg	atgccgccgt	gttccggctg	tcagcgcagg	ggcgcccggt	tctttttgtc	1260
aagaccgacc	tgccgggtgc	cctgaatgaa	ctccaagacg	aggcagcgcg	gctatcgtgg	1320
ctggccacga	cgggcgttcc	ttgcccagct	gtgctcgacg	ttgtcactga	agcgggaagg	1380
gactggctgc	tattgggcca	agtgcggggg	caggatctcc	tgctcatctca	ccttgctcct	1440
gccgagaaag	tatccatcat	ggctgatgca	atgcggcgcc	tgcatacgct	tgatccggct	1500
acctgcccac	tcgaccacca	agcgaaacat	cgcatcgagc	gagcacgtac	tcggatggaa	1560
gccgggtctg	tcgatcagga	tgatctggac	gaagagcatc	aggggctcgc	gccagccgaa	1620
ctgttcgcca	ggctcaaggc	gcggatgccc	gacggcgagg	atctcgtcgt	gacccatggc	1680
gatgcctgct	tgccgaatat	catggtggaa	aatggccgct	tttctggatt	catcgactgt	1740
ggcgggctgg	gtgtggcgga	ccgctatcag	gacatagcgt	tggtaccg	tgatattgct	1800
gaagagcttg	gcggcgaaatg	ggctgaccgc	ttcctcgtgc	tttacgggtat	cgccgctccc	1860
gattcgcagc	gcacgcctt	ctatgcctt	cttgacgagt	tcttctgagc	gggactctgg	1920
ggttcgctag	aggatcgatc	ctttttaacc	catcacatat	acctgccgtt	cactattatt	1980
tagtgaaatg	agatattatg	atattttctg	aattgtgatt	aaaaaggcaa	ctttatgccc	2040
atgcaacaga	aactataaaa	aatacagaga	atgaaaagaa	acagatagat	tttttagttc	2100
tttaggcccg	tagtctgcaa	atccttttat	gattttctat	caaacaaaag	aggaaaatag	2160
accagttgca	atccaaacga	gagtctaata	gaatgaggtc	gaaaagtaaa	tcgcgcgggt	2220
ttgttactga	taaagcaggc	aagacctaaa	atgtgtaaag	ggcaaagtgt	atactttggc	2280
gtcaccctt	acatatttta	ggtctttttt	tattgtgcgt	aactaacttg	ccatcttcaa	2340
acaggagggc	tggaagaagc	agaccgctaa	cacagtacat	aaaaaaggag	acatgaacga	2400
tgacaacata	aaagtttgca	aaacaagcaa	cagtattaac	ctttactacc	gcactgctgg	2460
caggaggcgc	aactcaagcg	tttgcgaaag	aaacgaacca	aaagccatat	aaggaaacat	2520
acggcatttc	ccatattaca	cgccatgata	tgctgcaaat	ccctgaacag	caaaaaaatg	2580
aaaaatatca	agtttctgaa	tttgattcgt	ccacaattaa	aaatatctct	tctgcaaaag	2640
gcctggacgt	ttgggacagc	tgccatttac	aaaacgctga	cggcactgtc	gcaaaactatc	2700
acggctacca	catcgtcttt	gcattagccg	gagatcctaa	aatgccggat	gacacatcga	2760
tttacatggt	ctatcaaaaa	gtcggcgaaa	cttctattga	cagctggaaa	aacgctggcc	2820
gcgtctttaa	agacagcgac	aaattcgatg	caaattgatc	tatcctaaaa	gaccaaacac	2880
aagaatggc	aggttcagcc	acatttacat	ctgacggaaa	aatccgttta	ttctacactg	2940
atttctccgg	taaacattac	ggcaaacaaa	cactgacaac	tgacaagtt	aacgtatcag	3000
catcagacag	ctctttgaac	atcaacgggtg	tagaggatta	taaatcaatc	tttgacgggtg	3060
acggaaaaac	gtatcaaaat	gtacagcagt	tcacgatga	aggcaactac	agctcaggcg	3120
acaaccatac	gctgagagat	cctcactacg	tagaagataa	aggccacaaa	tacttagtat	3180
ttgaagcaaa	cactggaact	gaagatggct	accaaggcga	agaatcttta	tttaacaaag	3240
catactatgg	caaaagcaca	tcattcttcc	gtcaagaaaag	tcaaaaactt	ctgcaaaagc	3300
ataaaaaacg	cacggctgag	ttagcaaacg	gcgctctcgg	tatgattgag	ctaaacgatg	3360
attacacact	gaaaaaagtg	atgaaaccgc	tgattgcac	taacacagta	acagatgaaa	3420
ttgaacgcgc	gaacgtcttt	aaaatgaacg	gcaaatggta	cctgttcact	gactcccgcg	3480
gatcaaaaaat	gacgattgac	ggcattacgt	ctaacgatat	ttacatgctt	ggttatgttt	3540
ctaattcttt	aactggccca	tacaagccgc	tgaacaaaac	tgcccttggtg	ttaaaaatgg	3600
atcttgatcc	taacgatgta	acctttactt	actcacactt	cgctgtacct	caagcgaaaag	3660
gaaacaatgt	cgtgattaca	agctatatga	caaacagagg	attctacgca	gacaaacaat	3720
caacgtttgc	gccgagcttc	ctgctgaaca	tcaaaggcaa	gaaaacatct	gttgtcaaaag	3780
acagcatcct	tgaacaagga	caattaacag	ttaacaaata	aaaacgcaaa	agaaaatgcc	3840
gatgggtacc	gagcgaaatg	accgaccaag	cgacgccccaa	cctgccatca	cgagatttcg	3900
attccaccgc	cgccttctat	gaaagggttg	gcttcgggaat	cgttttccgg	gacgccctcg	3960
cggacgtgct	catagtcac	gacgcccggtg	attttgtagc	cctggccgac	ggccagcagg	4020
taggccgaca	ggctcatgcc	ggccgcgcgc	gccttttcc	caatcgctct	tcgttcgtct	4080

ggaaggcagt	acaccttgat	aggtgggctg	cccttctctg	ttggcttggt	ttcatcagcc	4140
atccgcttgc	cctcatctgt	tacgccggcg	gtagccggcc	agcctcgcag	agcaggattc	4200
ccgttgagca	ccgccagggtg	cgaataaggg	acagtgaaga	aggaacaccc	gctcgcgggt	4260
gggcctactt	cacctatcct	gcccggctga	cgccgttgga	tacaccaagg	aaagtctaca	4320
cgaacccttt	ggcaaaatcc	tgtatatcgt	gcgaaaaagg	atggatatac	cgaaaaaatc	4380
gctataatga	ccccgaagca	gggttatgca	gcggaaaagc	gctgcttccc	tgctgttttg	4440
tggaatatct	accgactgga	aacaggcaaa	tgcaggaaat	tactgaactg	aggggacagg	4500
cgagagacga	tgccaaagag	ctcctgaaaa	tctcgataac	tcaaaaaata	cgcccggtag	4560
tgatcttatt	tcattatggg	gaaagttaga	acctcttacg	tgccgatcaa	cgtctcattt	4620
tcgccaaaag	ttggcccagg	gcttcccggg	atcaacaggg	acaccaggat	ttattttattc	4680
tgcaagtga	tcttccgtca	caggatattta	ttcggcgcaa	agtgcgtcgg	gtgatgctgc	4740
caacttactg	atttagtgta	tgatgggtgtt	tttgagggtgc	tccagtggct	tctgtttcta	4800
tcagctcctg	aaaatctcga	taactcaaaa	aatacgcccc	gtagtgatct	tattttcatta	4860
tggtgaaagt	tggaacctct	tacgtgccga	tcaacgtctc	atcttcgcca	aaagttggcc	4920
cagggtcttc	cggtatcaac	agggacacca	ggattttattt	attctgcgaa	gtgatcttcc	4980
gtcacaggta	tttattcggc	gcaaagtgcg	tcgggtgatg	ctgccaactt	actgatttag	5040
tgatgatgg	tggttttgag	gtgctccagt	ggcttctgtt	tctatcaggg	ctggatgatc	5100
ctccagcgcg	gggatctcat	gctggagttc	ttcgcccacc	ccaaaaggat	ctagggtgaag	5160
atcctttttg	ataatctcat	gaccaaatac	ccttaacgtg	agttttctgt	ccactgagcg	5220
tcagaccccc	tagaaaagat	caaaggatct	tcttgagatc	ctttttttct	gcgcgtaatc	5280
tgctgcttgc	aaacaaaaaa	accaccgcta	ccagcgggtg	tttgtttgcc	ggatcaagag	5340
ctaccaactc	tttttccgaa	ggtaactggc	ttcagcagag	cgcagatacc	aaatactgtt	5400
cttctagtgt	agcgcgtagt	aggccaccac	ttcaagaact	ctgtagcacc	gcctacatac	5460
ctcgctctgc	taatcctgtt	accagtggct	gctgccagtg	gcgataagtc	gtgtcttacc	5520
gggttgga	caagacgata	gttaccggat	aaggcgcagc	ggtcgggctg	aacggggggg	5580
tcgtgcacac	agcccagctt	ggagcgaacg	acctacaccg	aactgagata	cctacagcgt	5640
gagctatgag	aaagcgccac	gcttcccga	gggagaaaagg	cggacaggta	tccggttaagc	5700
ggcaggggtcg	gaacaggaga	gcgcacgagg	gagcttccag	ggggaaacgc	ctgggtatctt	5760
tatagtcctg	tcgggtttcg	ccacctctga	cttgagcgtc	gatttttgtg	atgctcgtca	5820
ggggggcgga	gcctatggaa	aaacgccagc	aacgcggcct	ttttacgggt	cctggccttt	5880
tgctggcctt	ttgctcacat	gttctttcct	gcgttatccc	ctgattctgt	ggataaccgt	5940
attaccgcct	ttgagtggag	tgataccgct	cgccgcagcc	gaacgaccca	gcgcagcgag	6000
tcagtggagc	aggaagcgga	agagcgccca	atacgcaaac	cgctctccc	cgcgcttgg	6060
ccgattcatt	aatgcagctg	gcacgacagg	tttcccga	ggaaagcggg	cagtggagcg	6120
aacgcaatta	atgtgagtta	gctcactcat	taggcacccc	aggctttaca	ctttatgctt	6180
ccggctcgta	tggtgtgtgg	aattgtgagc	ggataacaat	ttcacacagg	aaacagctat	6240
gaccatgatt	acgccaagct	tgcatgcctg	ca			6272